

Method → Conclusion → Why did you get that conclusion? → Mark in the figure below

- 1) In parallelogram JKMN we used the distance formula to find the side lengths and found that there are two sets of congruent sides. The sides are congruent because they have the same slope. Taking a step back and looking at the figure we notice that **the congruent side lengths are opposite one another.**
- 2) I used the slope formula and found that the **sides in a parallelogram are parallel** and no sides are perpendicular.
- 3) Using inverse trig and angle properties of parallel lines with transversals we found the angle measures of the parallelogram. The conclusion I came to is that there are **two sets of congruent angles.**
- 4) Using midpoint formula we found the distance of the diagonals to be congruent because they were the same value. **Parallelograms do not have congruent diagonals.**
- 5) Using slope formula to find the slope of the diagonals we found that the diagonals are not perpendicular because their slopes were not opposite reciprocals. This means that **parallelograms do not have perpendicular diagonals.**
- 6) Using midpoint formula we found that both diagonals have the same midpoint. Because they have the same midpoint, we can conclude that the diagonals bisect each other. **Parallelograms have diagonals that bisect each other.**
- 7) To find the area of the parallelogram we used the same formula as a rectangle: $A=lw$. **The formula for finding the area of parallelograms is $A=lw$**
- 8) To find the perimeter of a parallelogram we use the formula $P=2b+2s$ where b is the base and s is the slanted side. **The formula for finding the perimeter of a parallelogram is $P=2b+2s$.**

